

**FIG. 1**

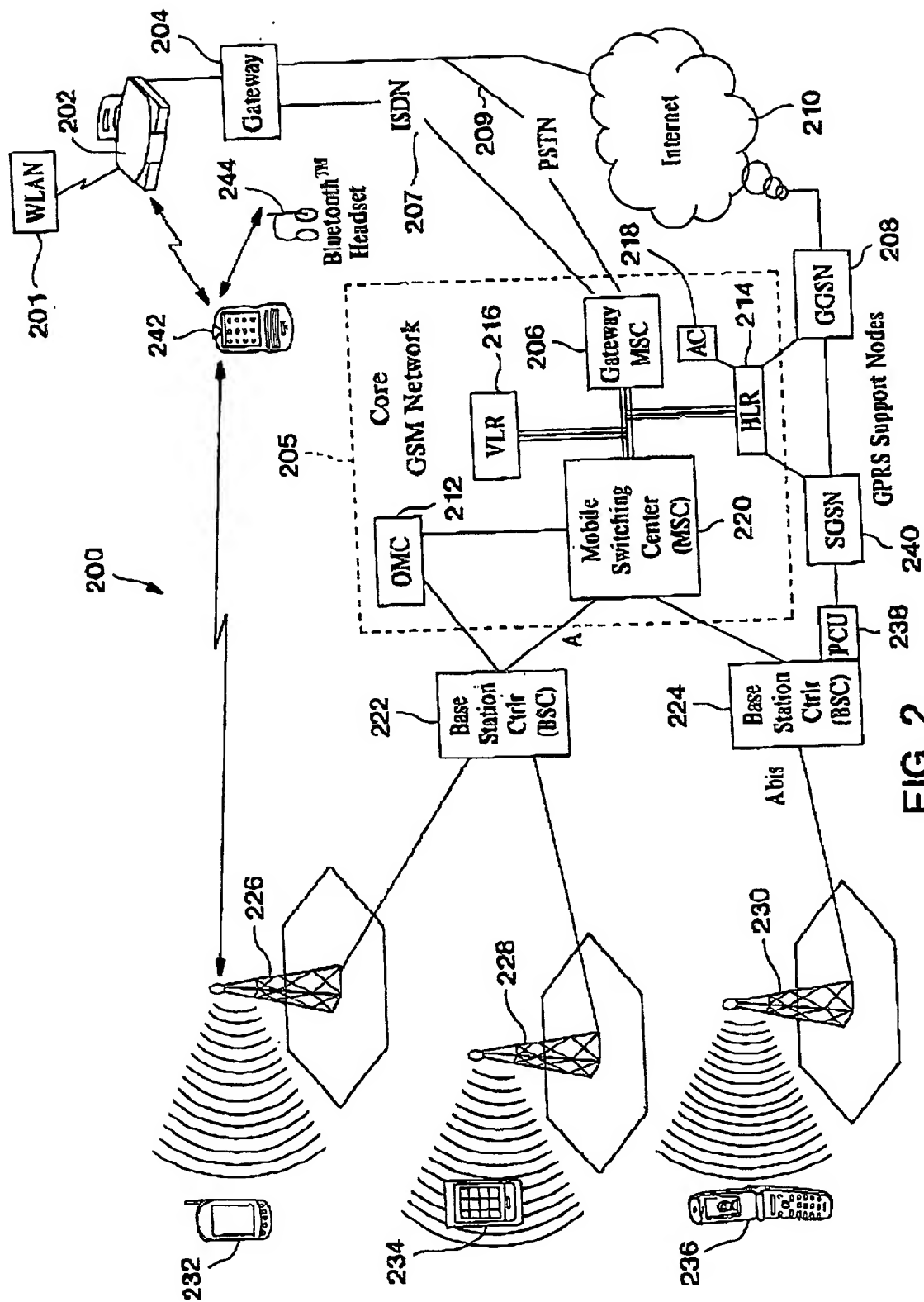
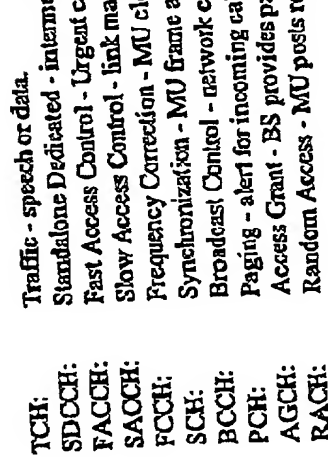


FIG. 2

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**FIG. 3**

# Call Establishment Process—Mobile Originated

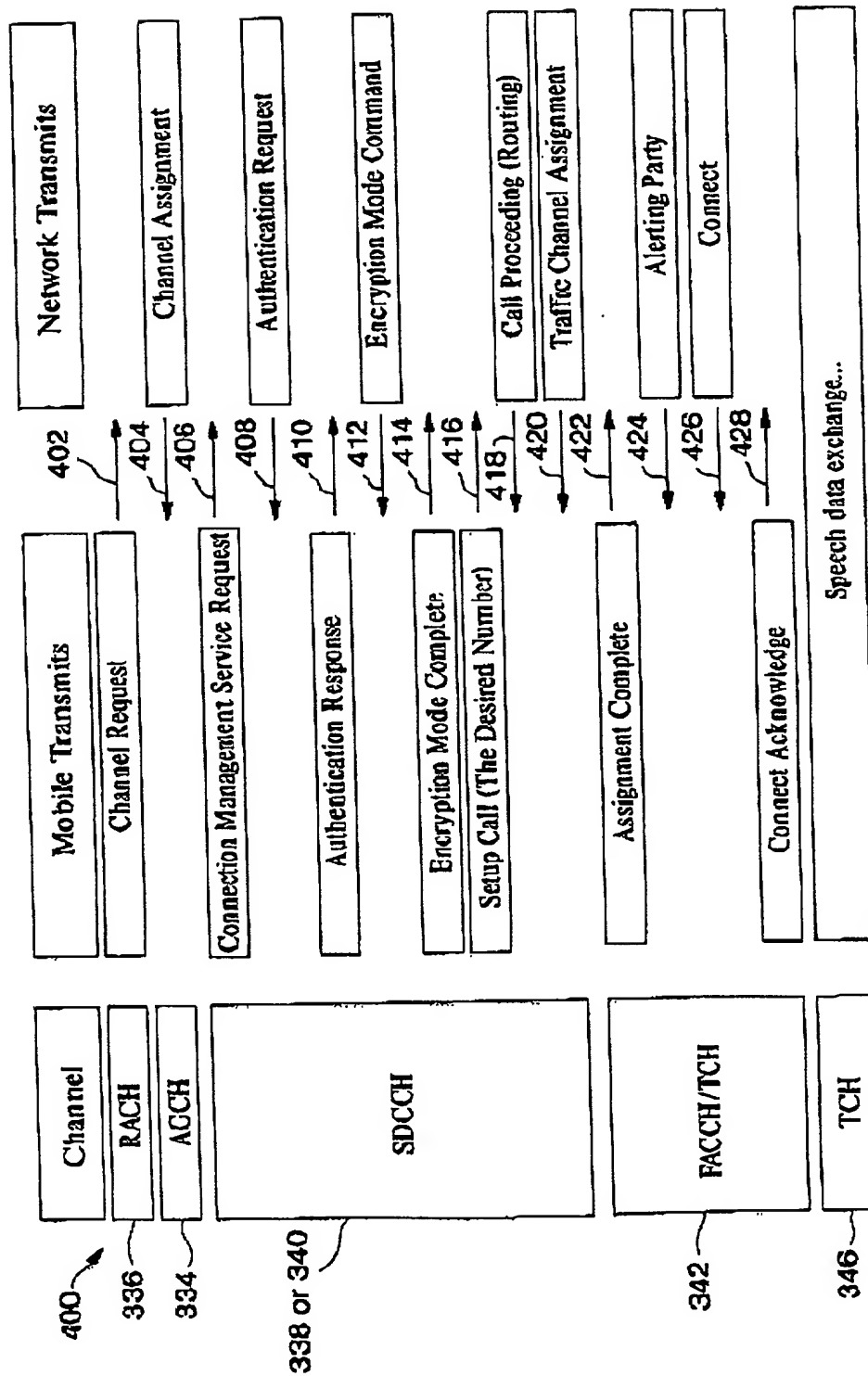


FIG. 4

# Receiving a Call-Mobile Terminated

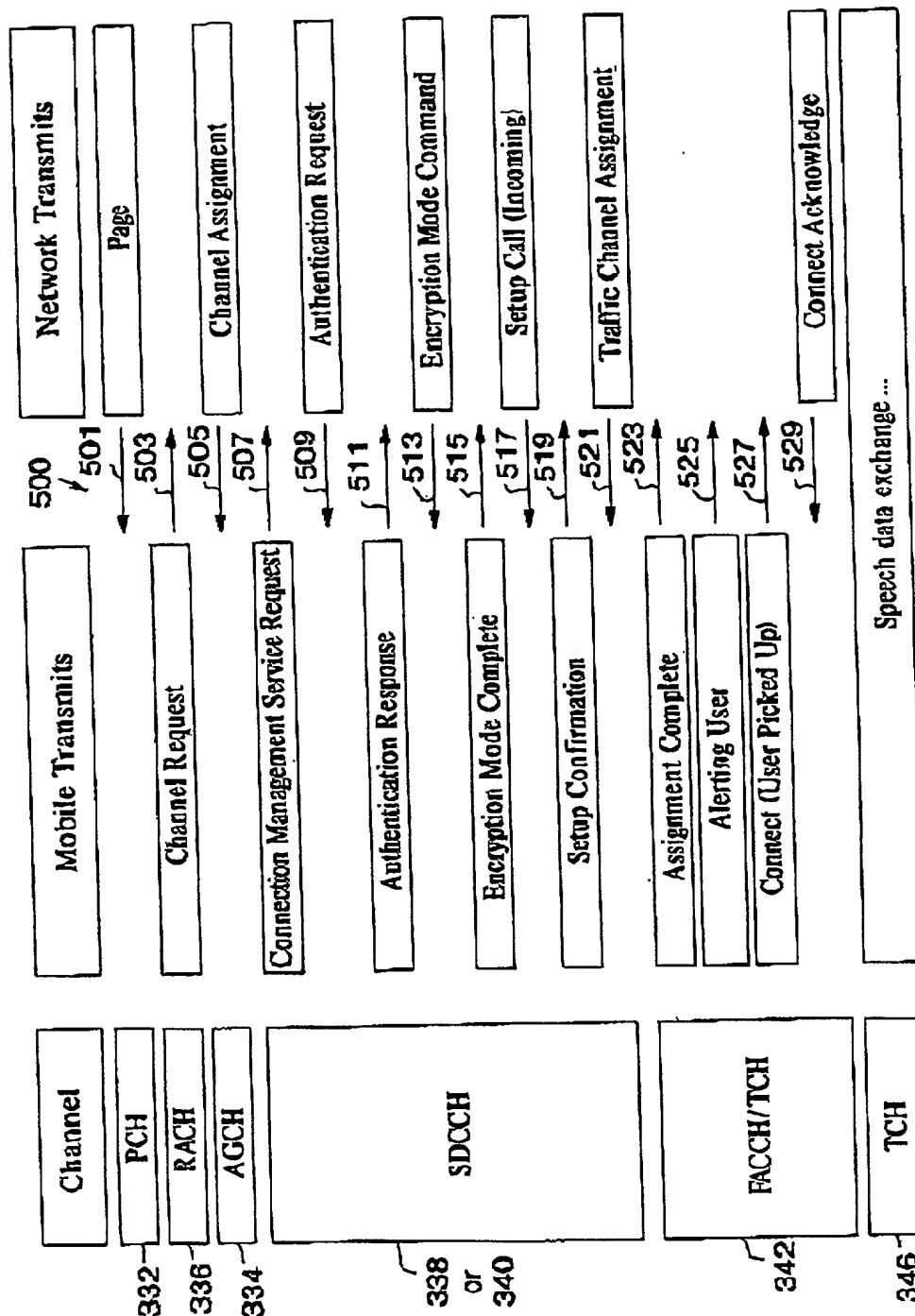


FIG. 5

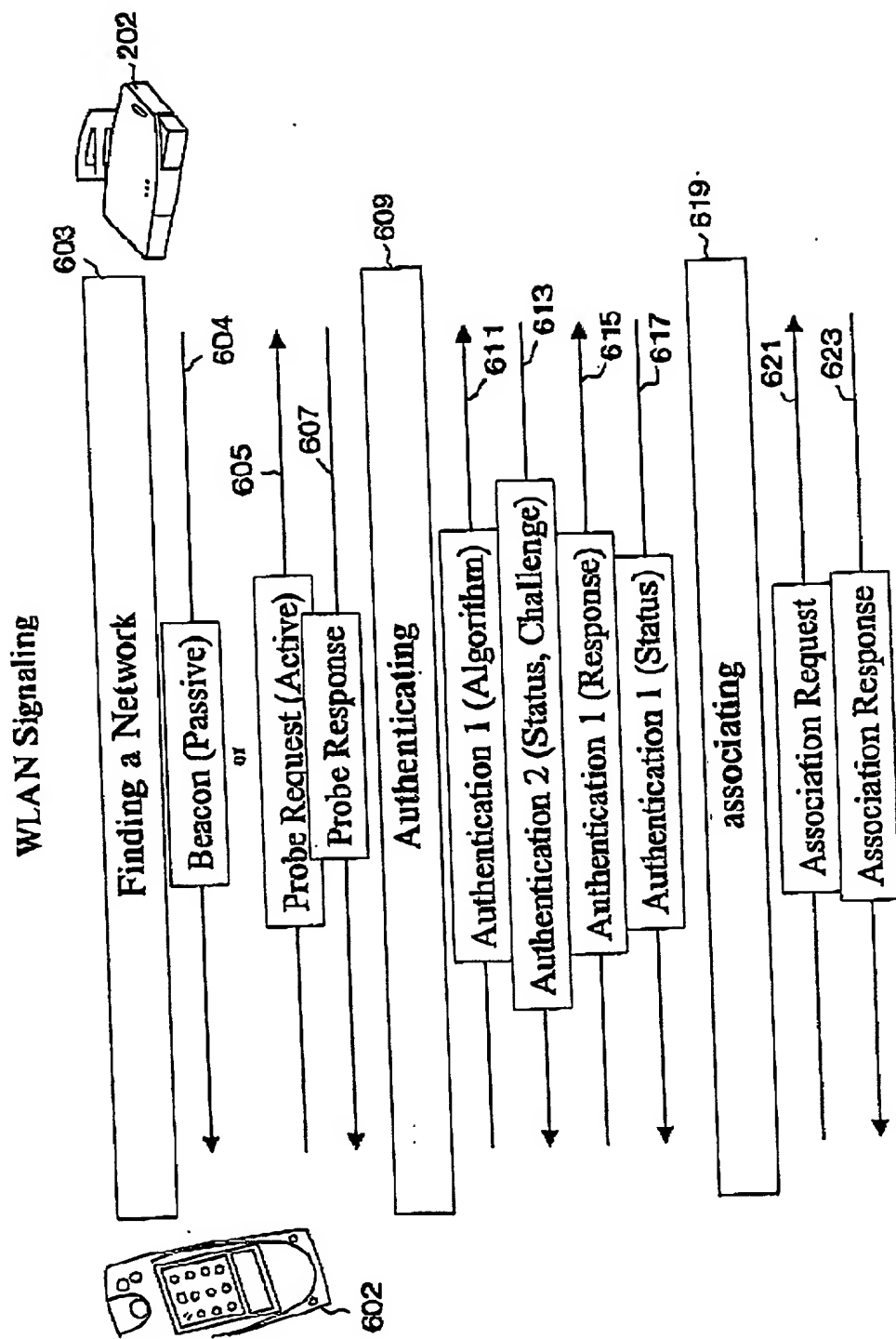


FIG. 6

# Interleaving WLAN Signaling with GSM Traffic For example, Finding a Network

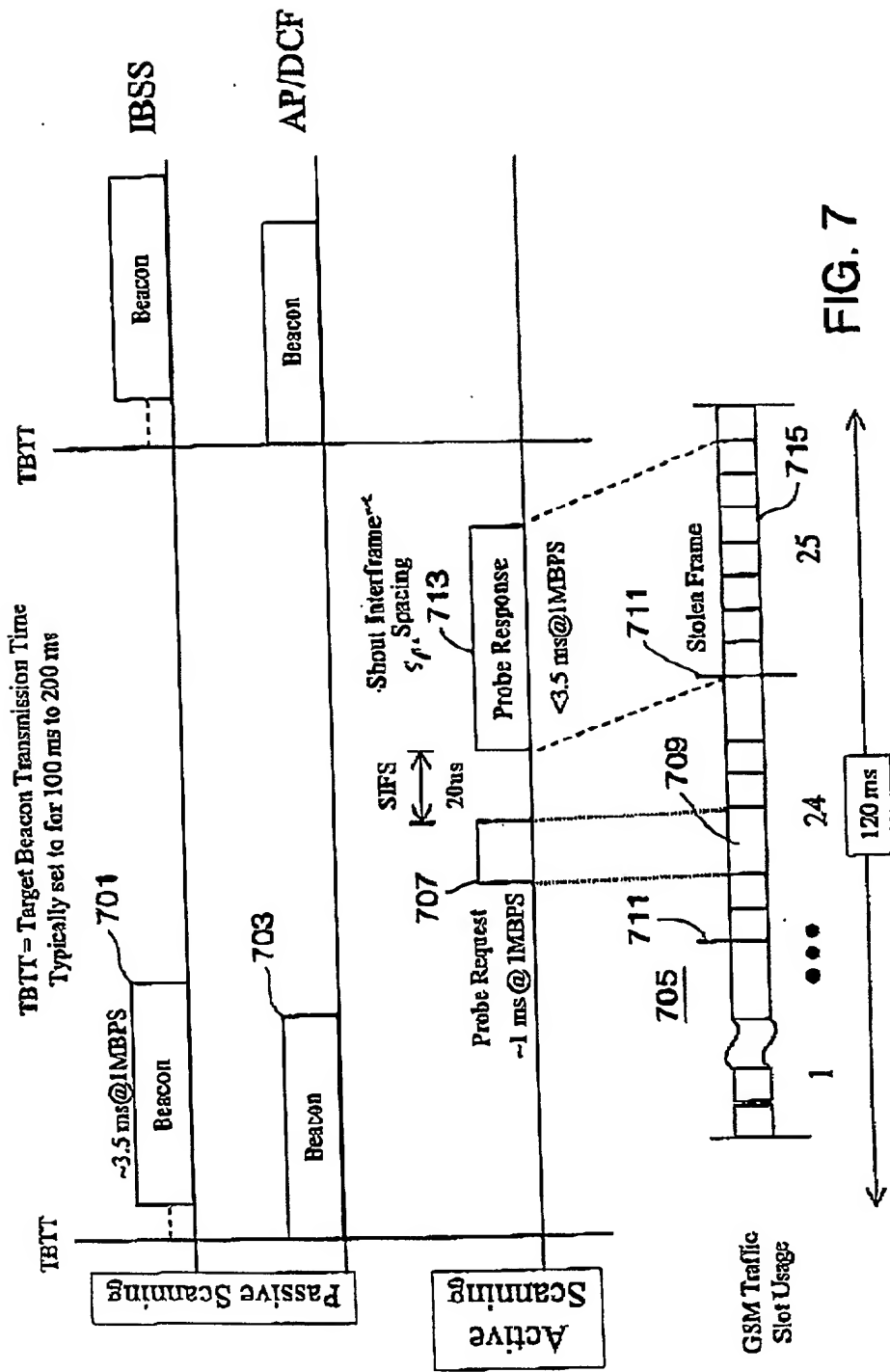


FIG. 7

Timing diagram for GSM/GPRS signaling frames. The diagram shows the sequence of events across four time slots: 10 ms, 20 ms, 30 ms, and 40 ms.

Key events and durations:

- Sampling/D/A: 10 ms
- Serial Data Transfer/DSP: 20 ms
- Voice Enc/Dec: 20 ms (G.729a = 10 bytes)
- Packet Assy/Strip: 30 ms (802.11/P/UDP/RTP)
- Serial Transfer Via Radio: 30 ms (811)
- Radio Ack (Opt): 40 ms (803)
- RF Tx/Rx: 40 ms

Signaling frames and their durations:

- 819: 2 ms
- 801: 2 ms
- 811: 16 us
- 803: 304 us

TDMA Frame (0.577 ms) = 8 Time Slots (4.615 ms)

Summary of frame durations:

Frame Type	Duration
803	352 us
811	304 us
801	672 us
803	304 us
Total	1632 us
3xSIFS	60 us

1 TDMA Frame (0.577 ms) = 8 Time Slots (4.615 ms)



# Current/Legacy Terminal Architecture

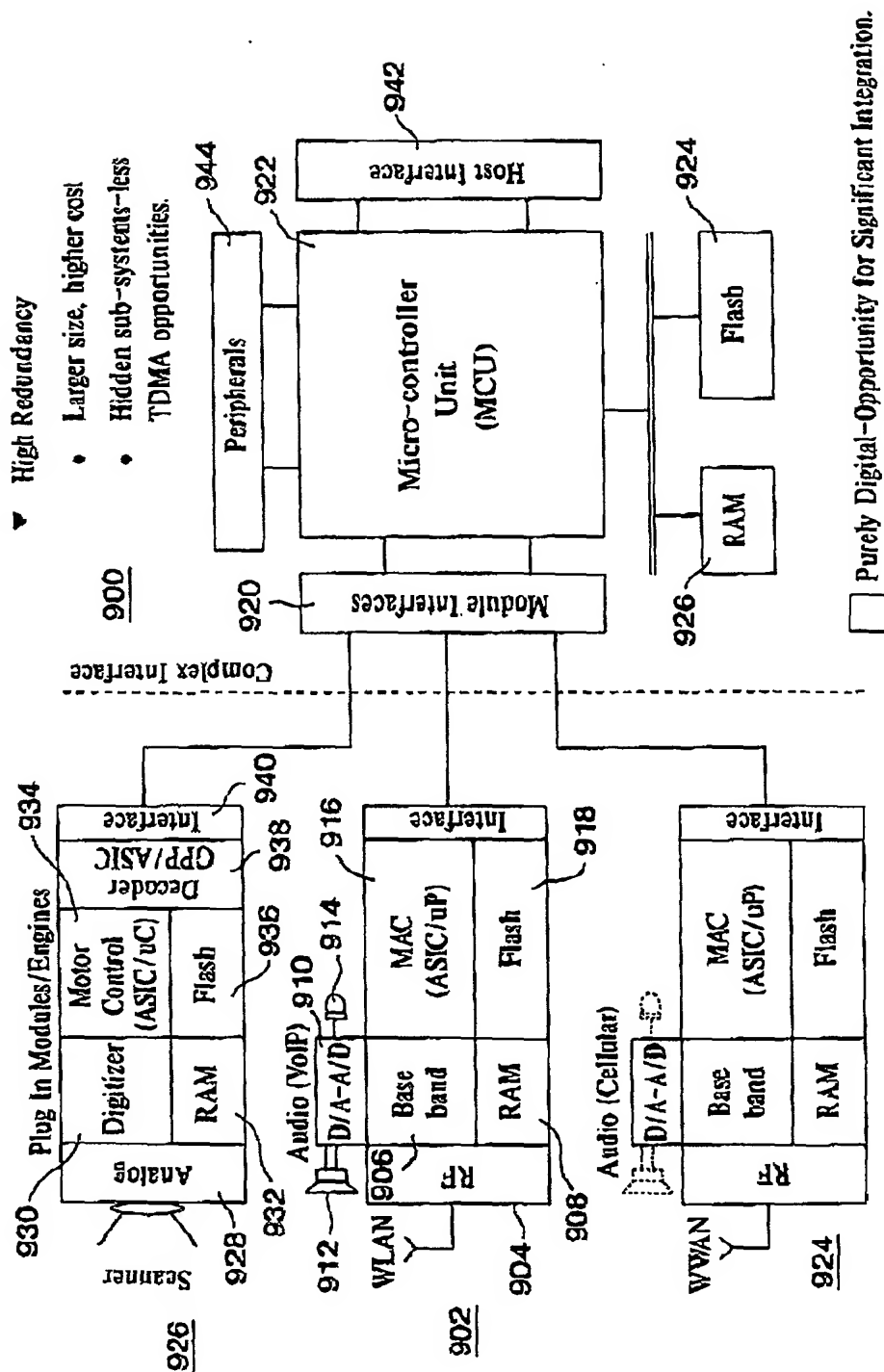


FIG. 9



## Conditions for Seamless Vertical Roaming

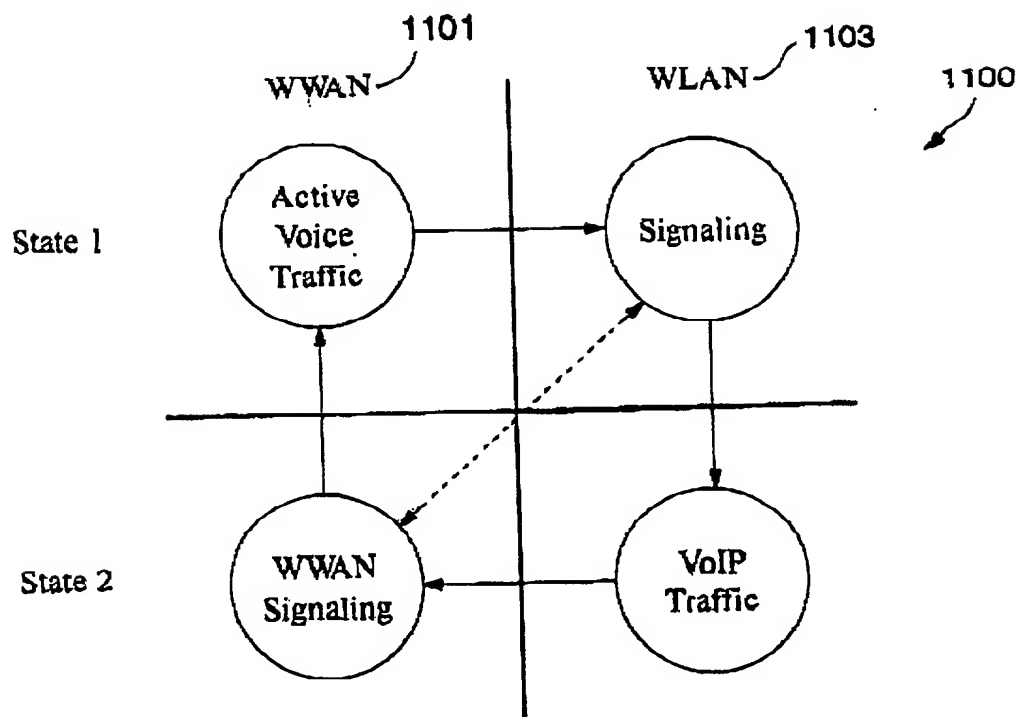


FIG. 11

# SVR from WWAN to WLAN

- ▼ Call is established between WWAN Radio A and Party C
- ▼ Dual-Mode Radio sub-system requests roaming:
  - WLAN radio places regular call through WLAN gateway to WWAN radio A.
  - WWAN radio A recognizes the call waiting and automatically accepts the call by conferencing into present connection.
- ▼ Now WLAN radio B is connected to traffic between Party C and WWAN radio A.
- ▼ The dual-mode radio system confirms this and then drops the WWAN radio A connection.

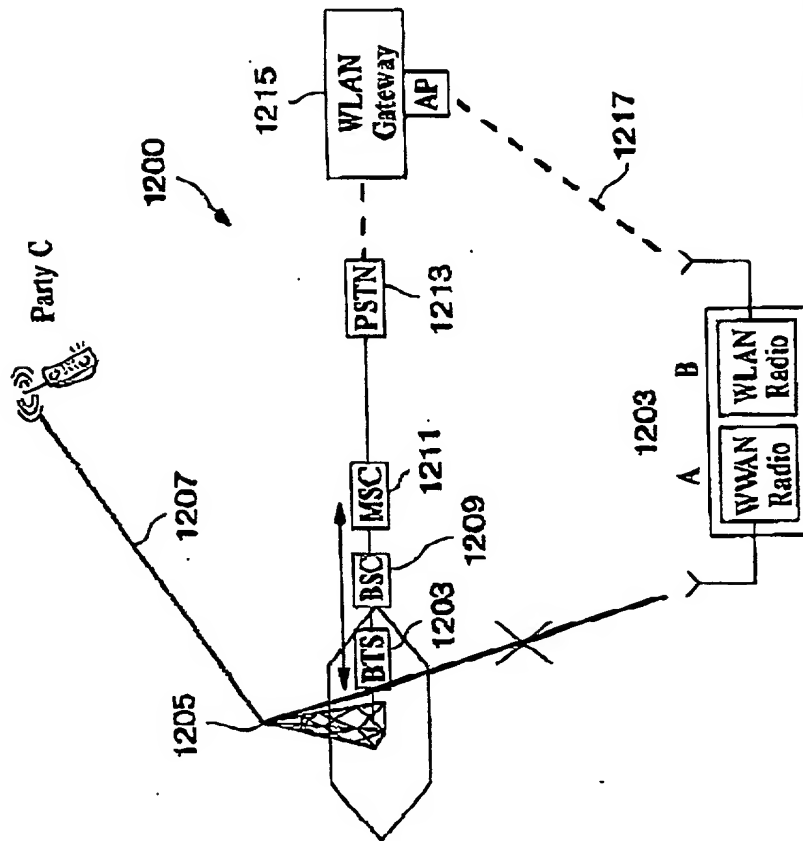


FIG. 12

# SVR from WLAN to WWAN (GM)

- ▼ VoIP call is established between WLAN Radio B and Party C
- ▼ Dual-Mode Radio sub-system requests roaming:
  - WLAN radio places conference call through WLAN gateway to WWAN radio A.
  - WWAN radio A automatically accepts the call.
- ▼ Now WWAN radio A is connected to traffic between Party C and WLAN radio B.
- ▼ The dual-mode radio system confirm this and then drops the WLAN radio B connection.
  - WLAN gateway maintains the conference call if it would be otherwise dropped when gateway disconnects.

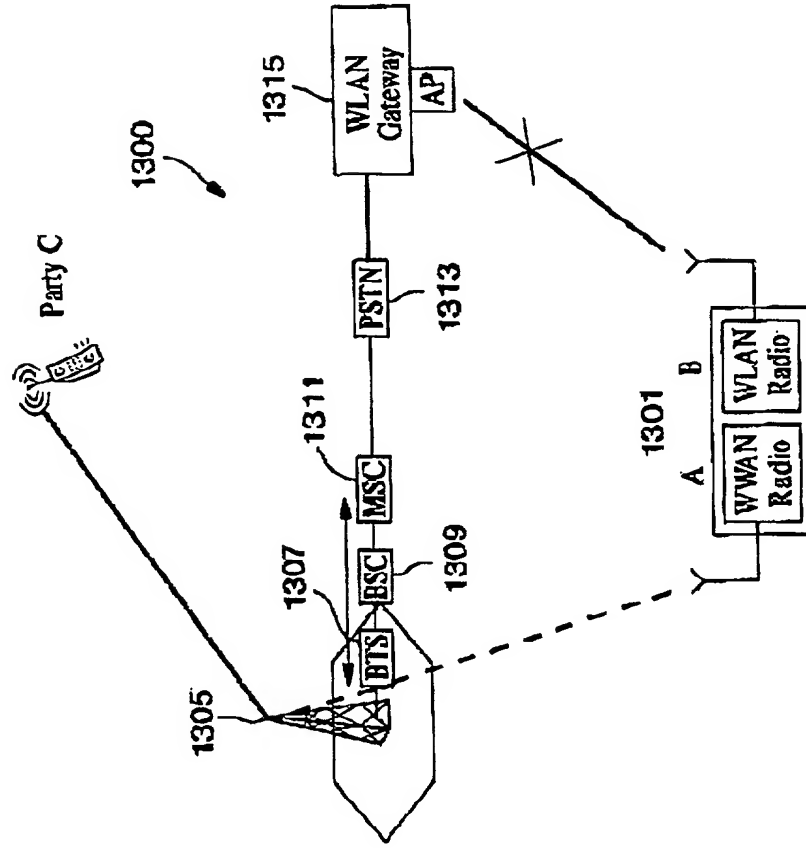


FIG. 13